



(U) Hurricane Harvey: Infrastructure Impact Assessment: Healthcare and Public Health – 2030 EDT 25 August 2017

(U) Assessment

(U) OCIA assesses that there will be a minimal to moderate regional impact to the Healthcare and Public Health Sector in the Gulf Coast region from Hurricane Harvey. Healthcare facilities will likely be impacted by severe flooding and electric power outages, which decreases healthcare facilities ability to administer routine and emergency medical services.

(U) Total rain accumulation of 15 to 30 inches with isolated maximum amounts of 40 inches is expected across the region. Flooding will likely cause disruptions impacting the Healthcare and Public Health Sector. The Transportation Systems Sector will be disrupted by flooding and debris. Flooding could disrupt the ability to evacuate patients from hospitals and nursing homes. Further, flooding could delay patients' ability to receive emergency care, preventing some staff from traveling to facilities, and blocking the delivery of emergency supplies. In addition, some communities located near the Texas coast will likely have to evacuate through major cities (e.g., Corpus Christi and Houston), resulting in additional traffic congestion.

(U) OCIA modeling estimates 8 hospitals (with 100 beds or more) and 27 nursing homes (with 50 beds or more) could be impacted by inland flooding of 3 feet or more. There are 2,985 hospital beds and 2,950 nursing home beds in the projected affected facilities. Some of the potentially impacted hospitals have started to discharge patients and reduce clinical functions. Figure 2 depicts these healthcare facilities under a precipitation forecast to highlight the severity of the flooding.

(U//FOUO) OCIA electric power outage modeling identifies 5 hospitals (with 70 beds or more) and 18 nursing homes (with 100 beds or more) in the 50 percent or greater electric power outage zone. There are 986 hospital beds and 2,574 nursing home beds in the projected affected area. Figure 3 depicts these hospitals and nursing homes.

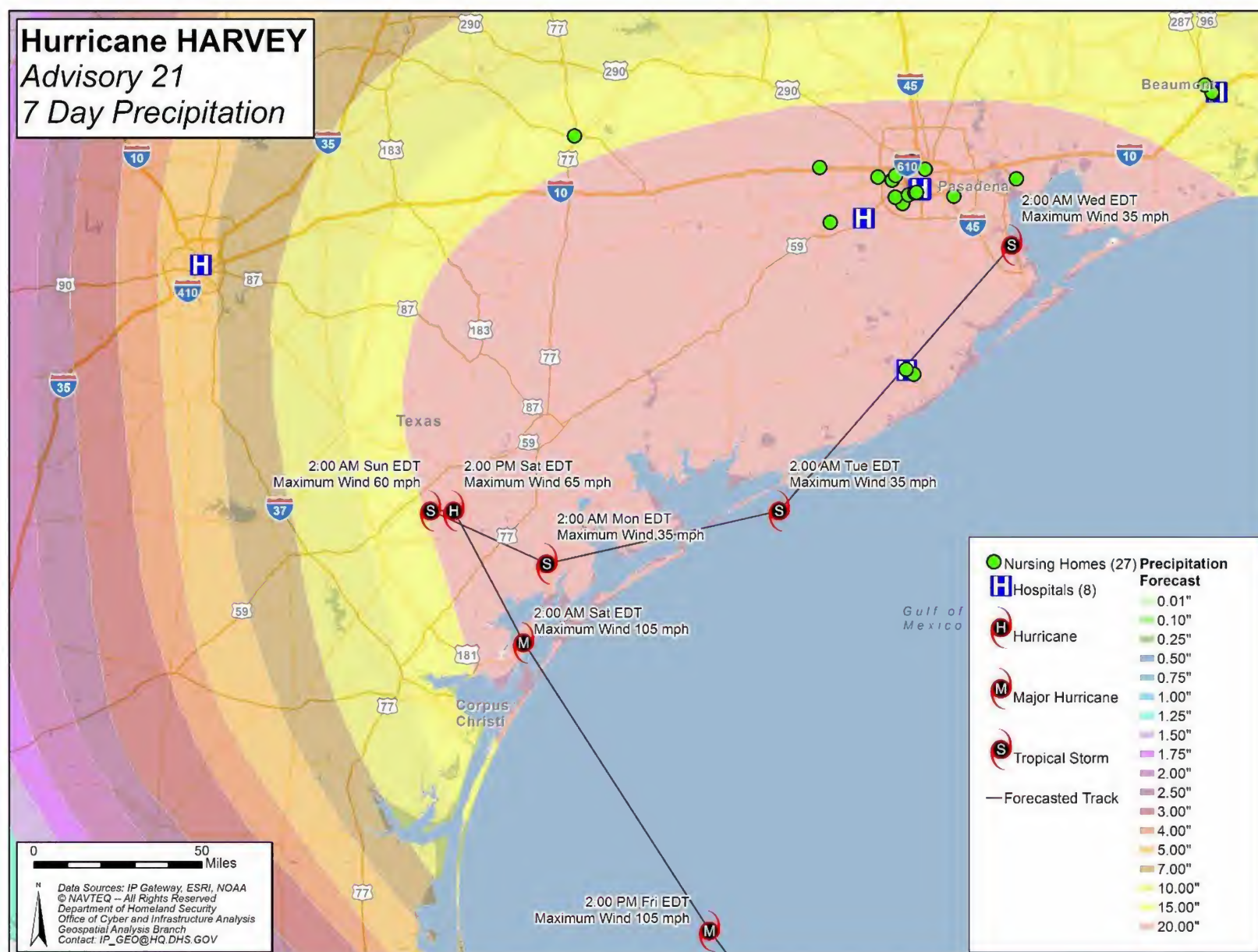
(U) Hospitals that lose electric power in the Texas Gulf Coast region should be able to continue operating on backup power (i.e., batteries and generators), some of which will have capacity to deliver limited services. Hospitals typically store at least 2 or 3 days worth of fuel for backup generation to support critical functions. Power outages or water damage may also impact information technology functions at a medical facility (e.g., data servers or workstations storing electronic health records), causing a degradation in administering care to patients. Back-up diesel generators used by hospitals are prone to failure because of their infrequent use or improper installation. In addition, facilities with back-up generation may not adequately support heating ventilation and air conditioning units which may result in evacuation of patients from hospitals.

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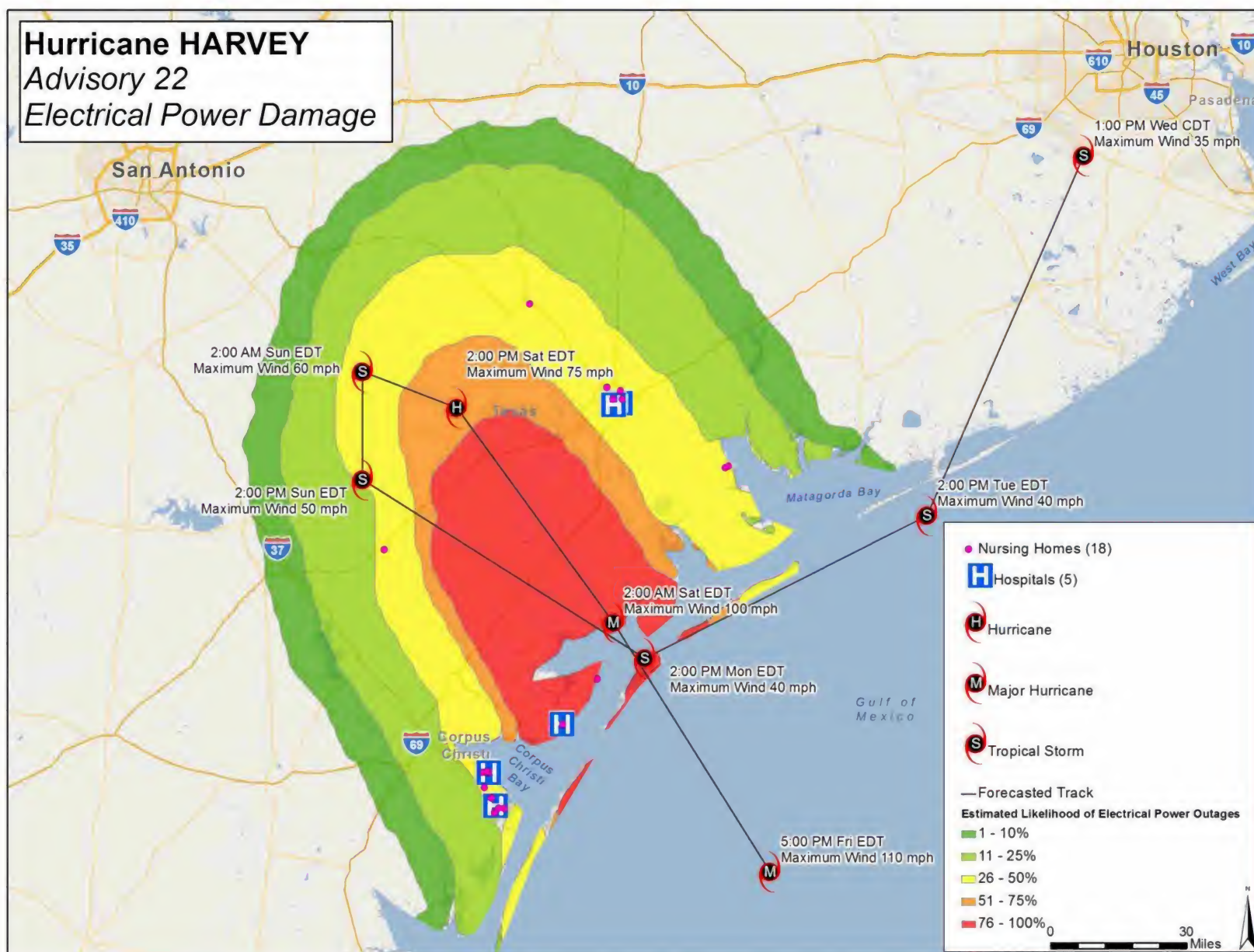
(U//FOUO) FIGURE 1— HURRICANE HARVEY TRACK

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(U//FOUO) FIGURE 2— HOSPITALS (WITH 100 BEDS OR MORE) AND NURSING HOMES (WITH 50 BEDS OR MORE) ESTIMATED TO RECEIVE 3' OR MORE OF FLOODING UNDER A 7-DAY PRECIPITATION FORECAST

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(U//FOUO) FIGURE 3— HOSPITALS (WITH 70 BEDS OR MORE) AND NURSING HOMES (WITH 100 BEDS OR MORE) IN THE 50 PERCENT OR GREATER ELECTRIC POWER OUTAGE ZONE

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